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PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re the Application of: TOMOHARU HORIO Serial No.: 09/653,268 Filed: August 31, 2000 For: INFRARED DATA COMMUNICATION MODULE AND METHOD OF MAKING THE SAME	Art Unit: 2872 Examiner: Dinh, Tuan T.

7/11 9-18

AMENDMENT

Box: Non-Fee Amendment
Commissioner for Patents
Washington, D.C. 20231

Sir:

In response to the Office Action mailed on June 20, 2002, please amend the above-identified application as follows:

No extension of time or other fees are believed to be due, except as detailed in the attached documents. However, any extension of time necessary to prevent abandonment is hereby requested, and any fee necessary for consideration of this response is hereby authorized to be charged to Deposit Account Number 50-1390.

IN THE SPECIFICATION:

Please replace paragraphs beginning at page 14, line 13, as shown in the attached sheet.

IN THE CLAIMS:

Please cancel claims 2 and 6-10 without prejudice or disclaimer, amend claims 1 and 3, and add new claim 11 as shown in the attached sheet(s).

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REPLACEMENT SPECIFICATION PARAGRAPH

Please enter the following replacement specification paragraphs.

Page 14, line 13:

The substrate 1 may be made of glass-fiber-reinforced epoxy resin for example and has a rectangular or strip-like configuration elongated in one direction. The substrate 1 is formed with a plurality of slits 18 spaced from each other longitudinally of the substrate 1. Each of the slits 18 is narrow and extends widthwise of the substrate 1. The substrate 1 has an obverse surface 10a which provides component mounting regions S each between respective two adjacent slits 18 for mounting components, as described later. Each of the component mounting regions S includes a plurality of sub-areas 19 and a conductor layer 10 surrounding each of the sub-areas 19.

REPLACEMENT CLAIMS

Please substitute the following claims for the pending claims with the same number.

1. (Amended) A method of making infrared data communication modules comprising the steps of:

forming predetermined conductor patterns on an obverse and a reverse surfaces of a substrate;

mounting, on one of the surfaces of the substrate, plural sets of light emitting elements and light receiving elements;

resin-molding an initial package which encloses the plural sets of light emitting elements and light receiving elements on the substrate; and

dividing the initial package into a plurality of final packages each of which encloses a respective set of light emitting element and light receiving element;

wherein the mounting step includes arranging the plural sets of light emitting elements and light receiving elements in a matrix on said one surface of the substrate; and

wherein the resin-molding step includes forming a plurality of initial packages arranged in a matrix.

2. (Deleted)

3. (Amended) The method of making infrared data communication modules according to claim 2, wherein the substrate is elongated in one direction, the substrate being formed with a

plurality of slits extending widthwise of the substrate and spaced from each other longitudinally of the substrate, the plural sets of light emitting elements and light receiving elements being mounted on said one surface of the substrate in each of regions defined between the slits.

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4. (Unchanged) The method of making infrared data communication modules according to claim 1, wherein the pattern forming step includes forming, on the reverse surface of the substrate, terminals for connection to through-holes penetrating the substrate thicknesswise together with dummy patterns which are substantially equal in thickness to the terminals.

5. (Unchanged) The method of making infrared data communication modules according to claim 1, wherein the pattern forming step includes forming, on the reverse surface of the substrate, terminals for connection to through-holes penetrating the substrate thicknesswise, the terminals being elongated to be substantially rectangular for bonding to an external mounting board.

6. (Deleted)

7. (Deleted)

8. (Deleted)

9. (Deleted)

10. (Deleted)

11. (New) An infrared data communication module comprising:

a substrate having an obverse surface and a reverse surface,

a wiring pattern formed on the obverse surface of the substrate,

a set of light emitting element and light receiving element mounted on the obverse surface of the substrate in electrical connection to the wiring pattern,

a resin package formed on the obverse surface of the substrate for enclosing the set of light emitting element and light receiving element,

a plurality of terminals formed on the reverse surface of the substrate in electrical connection to the wiring pattern, and

a dummy pattern formed on the obverse surface of the substrate but electrically separated from the wiring pattern and the terminals.

REMARKS

Reconsideration of this application is respectfully requested in view of the foregoing amendment and the following remarks.

Claims 1-10 were pending in this application. Claims 2 and 6-10 have been cancelled, claims 1 and 3 have been amended and claim 11 has been added hereby. Accordingly, claims 1, 3-5 and 11 will be pending herein upon entry of this Amendment. Support for the amendment to claim 1 can be found in now-cancelled claim 2. For the reasons stated below, Applicant respectfully submits that all claims pending in this application are in condition for allowance.

In the Office Action the disclosure and claim 10 were objected to, claims 1-10 were rejected under 35 U.S.C. §112, second paragraph and claims 1, 4-7 and 9-10 were rejected under 35 U.S.C. §102(b) as being anticipated by the admitted prior art. However, claims 2, 3 and 8 were deemed allowable if rewritten in independent form.

To the extent these objections or rejections might still be applied to claims presently pending in this application, they are respectfully traversed.

In view of the present amendments it is believed that the objections in the Office Action have been satisfactorily addressed.

With respect to the art-based rejection, amended claim 1 corresponds substantially to original claim 2, which was deemed allowable by the Examiner. Minor amendments have been made to the wording to address the indefiniteness issues pointed out by the Examiner. Thus, claim 1 is now believed to be in condition for allowance. However, it is noted that the admitted prior art (Figs. 20-23) shows a manufacturing process wherein each initial resin package encloses

only a single set of light emitting element 2e and light receiving element 3e, as opposed to the claimed limitation. Thus, amended claim 1 is distinct from the admitted prior art not only with respect to the limitations of original claim 2, but also with respect to this limitation.

New independent claim 11 now calls for an infrared data communication module which comprises a substrate having an obverse surface and a reverse surface, a wiring pattern formed on the obverse surface of the substrate, a set of light emitting element and light receiving element mounted on the obverse surface of the substrate in electrical connection to the wiring pattern, a resin package formed on the obverse surface of the substrate for enclosing the set of light emitting element and light receiving element, a plurality of terminals formed on the reverse surface of the substrate in electrical connection to the wiring pattern, and a dummy pattern formed on the obverse surface of the substrate but electrically separated from the wiring pattern and the terminals.

According to the above-described arrangement, the dummy pattern (see element 22 in Figs. 14 and 15) has no electrical connection with the wiring pattern (see element 70) on the obverse surface of the substrate or the terminals (see element 71) on the reverse surface of the substrate. Thus, the dummy pattern has the sole function of providing co-planarity with respect to the terminals 71 for enhancing mounting stability.

The admitted prior art shown in Figs. 20-23 shows no dummy pattern. As clearly seen in Fig. 23, the surface of the substrate 1e formed with the terminals 71 has no other conductor pattern. Thus, the admitted prior art fails to teach or suggest the claimed dummy pattern.

In view of the foregoing all of the claims in this case are believed to be in condition for allowance. Should the Examiner have any questions or determine that any further action is desirable to place this application in even better condition for issue, the Examiner is encouraged to telephone applicant's undersigned representative at the number listed below.

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Respectfully submitted,

TOMOHARU HORIO

Date: September 13, 2002

By: for Lawrence D. Eisen (41,009)
Michael D. Bednarek
Registration No. 32,329

Attachments: Amended Spec. w/ Markings
Amended Claims w/ Markings

MDB/LDE/ggb